Report of the Special Commission to Study the Feasibility of Constructing a New Department of Mental Health Inpatient Facility: The Future of DMH's Inpatient Psychiatric Care in Massachusetts

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Introduction

The Special Commission (Commission) to study the feasibility of constructing a new inpatient facility in central Massachusetts for clients of the Department of Mental Health (DMH) was established by the General Court, pursuant to Section 364 of Chapter 149 of the Acts of 2004, which provided:

> There shall be a special commission to investigate and study the feasibility of constructing a new inpatient facility in central Massachusetts for clients of the department of mental health and other persons with mental illness who require hospitalization or continuing care in a hospital setting. The study shall include, but not be limited to design features of any such facility, costs of construction, financing strategies, timeline for development and construction, administration of any such facility, and the siting of any such facility. The commission shall consist of fifteen members as follows: five members of the house, one member appointed by minority leader, four appointed by the speaker of the house, three members of the senate, one appointed by the minority leader, two appointed by the president of the senate; the secretary of administration and finance or his designee; the commissioner of the department of mental health, or her designee; the commissioner of the department of capital asset management and maintenance, or his designee; a representative from American Federation of State County and Municipal employees; a representative from Mass Nurses Association and 2 representatives from the national alliance for the mentally ill of Massachusetts.[1] The commission shall report to the general court the results of its study together with recommendations and drafts of legislation by filing the same with the clerks of the Senate and the House of Representatives on or before April 1, 2005.[2] (b) No action shall be taken to reduce the client populations of Worcester State Hospital or Westborough State Hospital for the sole purpose of closing either or both of said hospitals, and no steps shall be taken to close either institution through attrition, layoffs or other means until the report of the special commission established in subsection (a) of this section has been filed and the general court shall have approved the closure of Worcester State Hospital or Westborough State Hospital, or both facilities.

The Commission was established to study the conclusions and recommendations of DMH's Inpatient Facility Report, submitted to the General Court in March of 2004. The Inpatient Facility Report was prepared in response to a request of the General Court contained in line-item

[1] The Commission subsequently voted to expand its membership to include a consumer, a human rights officer, a member of the board of trustees from the respective facilities, and a member of the National Association of Social Workers. The full list of Commissioner members is attached as Appendix A.

[2] Submission of this report has been necessarily delayed by the requirements of the site selection and feasibility study process

language in the Fiscal Year 2004 budget.[3] In the course of its study, DMH examined its current adult continuing care inpatient bed capacity and projected future need (demand). This analysis included:

- Trends in number of staffed beds and admissions to acute care general hospital psychiatric units and private psychiatric hospitals licensed by the Department.
- Admissions, census, discharges and length of stay data for Department adult continuing care inpatient services.
- Trends in civil versus forensic admissions to Department inpatient settings.
- Peer state comparisons.
- Number of current DMH adult continuing care inpatient clients ready for discharge, assuming community resources are available.

As a result of its study, DMH reached the following conclusions concerning its current continuing care inpatient system, which is comprised of 900 beds in 8 facilities across the state:

- 268 then current adult continuing care inpatient clients were ready for discharge to the community if sufficient resources were made available.[4]
- The Department's adult continuing care inpatient bed capacity can be safely reduced to approximately 740 beds (assuming 93% occupancy rate) if community discharges and follow-up treatment, rehabilitation and support are adequately funded.
- The Department has an obligation to the Commonwealth to maintain continuing care inpatient treatment capacity for individuals with serious and persistent mental illness.
- The Department will not shift the burden of responsibility for continuing care inpatient services to general hospital psychiatric units or private psychiatric hospitals.
- Consolidation of DMH adult continuing care inpatient settings is possible, but significant capital renovations are required to assure safe, high quality physical settings that foster positive treatment outcomes.
- In the central region of the state, the Commonwealth will incur significant operational inefficiencies as well as capital cost burdens by continuing to maintain both Worcester State Hospital and Westborough State Hospital.
- Consolidating DMH inpatient facilities in the central Massachusetts region will address these inefficiencies and cost burdens while improving quality of care to clients.
- Given aging physical plant structures and capital renovation requirements, neither Worcester State Hospital nor Westborough State Hospital is a viable facility to provide consolidated inpatient capacity in central Massachusetts.

The Commission members were appointed, and the Commission held its first meeting on January 10, 2005. Over the course of the ensuing year, the Commission has held six more meetings, which have been open to the public. It held two public hearings on October 19, 2005, one in

[3] The full report can be found on the DMH website at www.mass.gov/dmh

[4] In the months since submission of the Inpatient Study, DMH has been utilizing funding specifically indentified to support community placements to successfully discharge and place the 268 individuals identified as ready for discharge in the Report.

Westborough and one in Worcester. The Commission has been aided in its work by the services of consulting architects who are under contract to the Division of Capital Asset Management (DCAM) to conduct an in-depth feasibility study of the proposal to build a new DMH psychiatric facility in Central Massachusetts (Study). (See Appendix B for a list of consultants[5]) Commission members toured the existing facilities at Westborough State Hospital and Worcester State Hospital. In addition some members were able to tour newer psychiatric facilities in New Hampshire (New Hampshire State Hospital) and Maryland (Sheppard-Pratt Hospital). DMH staff, together with the consulting architects, also visited new facilities in New York State and Maine.

Working together with DCAM and the consulting architects, the Commission's study has following a two step process. The first step was to develop an optimum model of a psychiatric hospital without respect to the constraints of site. Presentations were made to the Commission as the work proceeded, with many questions posed by the members of the Commission researched and documented. In addition, DMH assembled nine workgroups comprised of DMH facility, clinical and administrative staff, consumers, families and advocates. Approximately 100 individuals participated in the various workgroups. The workgroups were organized around subject matter teams, specifically:

- Adult Programs
- Adolescent Programs
- Unit for the Deaf
- Therapy/Activity
- Clinical Ancillaries
- Dietary
- Administration
- Information Technology and Integration
- Facility Management & Support

The workgroups met together with the consulting architects throughout the year to generate and contribute data of the optimum hospital design. Each workgroup had at least one team leader who was also a member of the Global Workgroup which met at regular intervals to review the progress of the design process. Senior DMH and DCAM staff, including the Commissioners of both agencies, participated in Global Workgroup meetings, and were kept apprised of significant decision points.

Simultaneously, the consulting architects engaged in the second step of the process, which was to carefully assemble relevant information regarding the suitability of two DMH campuses at Worcester State Hospital, and Westborough State Hospital. The sites were considered in terms of access from local highways, climate, views, existing buildings, existing utility services, existing public transportation, emergency services, access to other kinds of medical care, access to community resources, topography, and numerous other issues. Both the Town of

[5] The Commission is extremely indebted to the team of consultants that helped guide this process. The Commission particularly wishes to thank Peter Pogorski, of Ellenzweig Associates, Frank Pitts of Architecture+, and Tannis Chefurka of Cehfurka Consulting Intl. Limited.

Westborough, and the City of Worcester demonstrated strong support and desire for the new hospital to be located on the respective campuses. Commission members had the opportunity to fully express their own opinions as to siting criteria and the suitability of the respective sites.

Once the basic configuration of the new hospital was established, the consulting architects demonstrated how the building might fit on each campus. In each case, over 20 different siting options were considered; most were eliminated because the topography was either unsuitable to sustain the emerging design, or would have required unreasonably large ground preparation expenses. Ultimately one site on each campus was determined to be an adequate building site for the proposed facility. Based on the information presented by the consulting architects, the testimony received from the public hearings, its own fact finding and deliberations, the Commission agreed that neither of the existing facilities at Westborough or Worcester is able to sustain the need for inpatient continuing care services in Central Massachusetts, and it unanimously endorsed the proposal to build a state of the art DMH psychiatric facility to serve the Commonwealth.

Based on the Commission's recommendations, the consulting architects completed their feasibility study, the conclusions of which were presented to, and adopted by, the Commission. The following sections outline the Commission's conclusions and recommendations.

Facility Design

Commission members toured the existing facilities at Worcester and Westborough State Hospitals. They also had the opportunity to visit newly constructed facilities in New Hampshire and Maryland. DMH staff also saw new facilities in New York State and Maine. The Commission is unanimous in its agreement that the existing Massachusetts facilities have far outlived their useful service. The buildings and supporting infrastructure are in need of substantial repair and, even with significant investment, cannot be improved to the point that they would meet current standards of care. Conversely, Commission members were struck by the advances that have been made in facility design, and by the demonstrable connections between state of the art design and improved treatment outcomes, shortened lengths of hospitalization, improvements in staff morale and retention, decreases in injuries, restraints and seclusion.

The goal of building this new facility is improving the outcome of treatment by providing patients with a better therapeutic environment and experience; the building itself becomes a therapeutic tool used by patients and staff together to enhance recovery. The planned facility supports a therapeutic program that focuses on emergence and recovery. This facility is unique, in that the therapeutic patient treatment program drives the building's program, square footage and organization. It melds the therapeutic and architectural programs such that the building acts as a recovery-focused clinical tool in facilitating the patient's functional return to the larger community. Accordingly, the facility is fundamentally organized as a microcosm of the larger community.

To reinforce a normalized environment and a sense of community within the new hospital, its planning is analogous to the larger community. A series of familiar elements are laid out to reflect the common range of environments in which people live. The metaphors employed throughout are concepts such as “house”, “neighborhood” and “downtown”.

Within this context and the social experiences it engenders, individuals can exercise their interacting and coping skills, gaining confidence and control along a progressive path of recovery. A varied sequence of experiences provides opportunity for individual observation and one-on-one counseling.

The most basic element of the community is one’s bedroom, providing privacy and safety. Bedrooms are clustered in “houses” which share adjacent active and quiet living rooms. These provide the smallest, most basic social unit for patients to manage. The “houses” are arranged in nursing units sized for efficient staff supervision and assessment, with an opportunity to share family-style meals with a larger group. This dining room is located along a common “street’, leading to the larger “neighborhood” beyond.

Each “neighborhood” is arranged as the patients’ domain, and shared by two nursing units. This sharing allows interaction with both more familiar and less familiar residents. Observation of the patient in a broad range of situations allows clinical staff a better understanding of individual patient needs. The sharing also affords the benefit of a richer range of clinical capabilities in staffing than could be offered in smaller “neighborhoods” dedicated to each nursing unit.

The “streets” connecting all patient areas are developed with “squares” for informal encounters, offering the opportunity for casual interactions. They also provide outside views, as is natural in any neighborhood. The “street” from the houses leads to the “neighborhood”. Overlook “porches” permit a patient to preview and understand the “downtown” environment and the outdoor “village green” beyond, serving to encourage the individual to want to participate in activities there, and to practice newly-acquired coping and interaction skills in the broader social setting.

The “downtown” includes a store, bank, cafe, music and art centers, the library, a fitness center, clinic, greenhouse and chapel. These activity centers are arrayed along interior “streets and squares”, and surround the “village green” – a secure outdoor space for spill-over of activities and community events in nice weather.

Visitors, patients and staff can interact in a variety of settings throughout the facility; thereby reinforcing the diversity and behavior-modeling opportunities available in any community, which is beneficial to individual growth and development.

What makes this facility state-of-the-art is the therapeutic approach of moving from small to larger group interactions – something that cannot be accomplished in the current facilities. The traditional mental hospital, an institutional, imposing building that conveys a negative image and stigmatizes the facility and its users, is undesirable. This facility should be made to look warm and to fit in, by borrowing familiar elements from the New England village, with components varied in scale, and combining familiar building materials associated with residential buildings.

It is generally recognized that when hospitals look and feel institutional, they are not as effective as a hospital that is a patient-centered and staff-enabling facility.

This layout permits an increasing scale of group interactions, allowing clinical staff to observe the patient in a full range of interactive settings, so that they can respond more effectively to emerging behavior patterns as part of an individualized treatment program centered on recovery.

The Optimum Model[6]

When the program of space needs for the new facility was established, an Optimum Model was developed with Study participants, including Commissioner members, to identify the basic organizational relationships and architectural form of the new hospital. This exercise was intentionally undertaken without a specific site, so that site constraints would not influence the Optimum Model. The Model that evolved was then used to test specific potential sites. Locations that could not accommodate the Optimum Model without significantly compromising it were eliminated.

The hospital actually consists of two facilities – one for 260 adults, and one for 60 adolescents. While these facilities share support services to capitalize on the economies of scale, they are totally separated from the patient's point of view. The adolescent facility contains a 30 bed continuing care hospital, as well as two separate 15 bed Intensive Residential Treatment Programs (IRTP); one is a traditional IRTP for adolescents who need a longer period of secure residential treatment, the other is a Behaviorally Intensive Residential Treatment (BIRT) program, primarily for Department of Social Services involved adolescents who require a structured behaviorally intensive treatment setting. The three adolescent programs are separated from each other and from the adults to provide for program integrity and flexibility and to enhance patient safety.

Peer institutions report that single-bed rooms are safer and less challenging for the patient, and they are more manageable for staff. Single bedrooms have recently been mandated as an accreditation standard for general hospitals (JCAHO, CMS unanimous ballot), and it is expected that this will soon become the standard for psychiatric hospitals. In anticipation of this requirement, the Optimum Model is designed with all single bedrooms.
In the adult facility, each house (each wing) consists of 8 or 10 single bedrooms. This is the basic building block of the hospital, and is considered a socially manageable group size, comparable to a large family or small business. The house is the basic social unit in which patients initially interact, Each adult unit is comprised of one 10 bed and two 8 bed houses, for a total of 26 beds.

A unit of 26 beds is an efficient staff to patient ratio. The unit has a mix of living, activity and therapy spaces, allowing the patient a rich range of experiences. The 26 patients dine together, family style. The three wings of each unit are arrayed around the central nursing station and its support space, which allows optimum line-of-sight visibility through all three houses.

Two 26-bed units share a neighborhood that contains a treatment mini-mall for 52 patients. This sharing affords individual patient access to a rich mix of clinical capabilities. Therapeutic staff

[6] Appendix C consists of renderings of the conceptual design of the new facility.

offices are generally clustered at both ends of the neighborhood, so they do not impinge on patients' space and can be closed off at night.

Instead of the typical institutional long, straight corridors from the houses to the neighborhoods and downtown, the patient circulation in this facility features a series of "boulevards", "streets" and "squares", allowing the patient a diverse experience reminiscent of an urban environment. The streets and squares become places of orientation and encounter. From the neighborhood, the patients can see downtown, which provides motivation for patients to move towards greater interaction and recovery, Views of the activity centers will encourage patients to want to experience the downtown.

The downtown is the center of treatment geared to prepare patients to return to the community outside the hospital. It is designed so that patients can be appropriately supervised, providing access to the greatest number of patients. The downtown is organized around a series of activity centers – those functions that are common to the facility as a whole, such as the gymnasium, retail store, café, library, arts & crafts, music, etc.. The closer one gets to the middle of the downtown, the more activity there is; the quieter spaces are located further away from the center (chapel, greenhouse, library, art rooms, etc.).

The downtown is arranged around a secure outdoor space, with a barrier that serves as a weather-protected walkway and short-cut. The central courtyard – or Village Green – is visible from the neighborhoods on all three stories.

Building Description

The adult hospital has three entrances: the main entrance (with direct business office and conference center access), the admissions entrance (with ambulance sally port), and the service entrance (with truck dock).

The service entrance will directly access the basement level, which contains all support space for the building such as dietary, storage, laundry, facilities management and mechanical equipment areas. This level provides access to all adult elevator cores and the adolescent facility's enclosed connector. This enables internal delivery of supplies and food to units without traversing patient areas.

At the upper levels, elevators are strategically located central to each neighborhood, and stairwells are located throughout the facility. In a facility of this size and type, emergency evacuation of persons in wheelchairs is normally accomplished horizontally, by passage through fire barriers. Thus it will not be necessary to build internal wheelchair ramps, which are costly and require a great deal of space.

The third floor contains administrative functions above the main entrance, directly accessible to the public by elevator without traversing patient areas. Spaces requiring patient access are located more centrally, such as the pharmacy and clinics. A dental clinic is included in the clinical area.

The second floor contains the upper level of the two-story health activities center, which is arranged around and in view of the gymnasium and the downtown. The Conference Center is located above the main entrance, where patients, staff and/or visitors can access it workably. Clusters of paired units with adjoining shared neighborhoods are designed in two or three story residential wings arrayed around the downtown of activity centers primarily on the first floor, which are concentrated to create a dynamic zone of therapeutic activity. The downtown spaces are 1 ½ to 2 stories high.

The winter garden at the most active center of the downtown is a strong focal point, providing a year-round spatial transition to the central village green. Both the winter garden and the village green are oriented for a southwest solar exposure.

The public-to-private barrier at the village green is envisioned as a pergola-like structure that is climb-resistant, providing security as well as a weather protected connection between ends of the crescent-shaped downtown. It will be clad with screening material such as metal mesh and/or Plexiglas. The structure is intended to fit in with the character of the facility and not give the impression of a fence, while still conveying security. The public side of the 14' high structure will be planted with shrubs to discourage anyone getting close enough to throw contraband over it, and it can be bermed with earth on the exterior side to reduce its perceived height.

The adolescent inpatient hospital has its own entrance, plus separate entries for the BIRT and IRTP units. Each of the four 15 bed units has living, dining, activity, and therapy spaces. The neighborhoods consist of offices and clinical spaces, while the adolescent downtown includes shared space, such as the school, library, and gymnasium. While facilities are shared to the extent appropriate to the individual therapeutic programs, certain facilities are duplicated to maintain clinically necessary separations. For example: houses are 7 or 8 beds, forming 15 bed units (considered the maximum manageable size for adolescents); two separate schools serve the inpatient program, and the IRTP and BIRT programs; the adolescents are very active, and need their own gym to let off steam; the three programs have independent program kitchens and entrance areas.

Private settings for family visits are available at every level in every house, neighborhood and downtown in both the adult and adolescent facilities.

In both the adolescent and adult facilities, every house has access to outdoor courtyards, and a porch to provide outside air for those that cannot leave the unit. The porches will be enclosed – they will not be an open design with railings. The intent is for a place that has the feel of a summer porch in a house. The courtyards will be enclosed by esthetically designed fencing that will provide the high degree of security needed for this space.

There is plenty of "breathing room" (green space) between the parking areas and the houses with secure courtyards, as the large parking areas have been sited well away from the building itself. The exterior wall materials are envisioned as a combination of natural stone and concrete clapboard. The sloped roof would be zinc. These are very durable and long-lasting materials, requiring minimal maintenance. Deploying the stone and clapboard in different combinations helps the two and three story elevations not look monolithic.

The hospital's quiet and private side is expressed differently from its active downtown. The village green façade is more uniform in its use of glass, with a variation meant to break down the scale and avoid monolithic repetition). The intent is to recall the variety and commonalities of facades surrounding a New England village green.

Systemic Efficiencies

The Optimum Model encompasses the most current thinking about care for the mentally ill. The building is flexible; it is patient centered and staff enabling; it focuses on the Department of Mental Health's goal of *recovery*; it does the work of a hospital without feeling like a hospital.

Based on the experience of other states, this kind of investment yields substantial systemic rewards. Average patient length of stay is expected to reduce from more than 700 days to 365 days. Better post-discharge success in the community is also achievable, resulting in fewer and shorter readmissions. It is not the intent to discharge patients simply to reduce the average length of stay, or to save money. Rather, the intent is to provide treatment and promote recovery, so that patients can return to and remain in the community.

The Optimum Model includes many specific instances of systemic efficiency. Fundamentally, patients experience it as a normal environment, as a series of small and familiar things; this contributes to their recovery. Some specific examples of the systemic efficiency include the following:

- Not only do the 8 to 10 bed houses, arranged in 26 person units, optimize the patient's experience, but these groupings also maximize around-the-clock staff efficiency.
- The less-institutional experience of dining family style provides opportunity for patients and staff to interact, while a centralized modern food service operation using heated and refrigerated carts permits meal preparation on two shifts instead of three.
- Staff deployed in shared neighborhoods serving 52 patients can include a broader range of therapeutic service capabilities – without increased staff cost – than the basic complement of capabilities a smaller staff would offer if located on each unit of 26 patients.
- The neighborhoods are arranged with staff nearby but outside of the patients' therapeutic areas (including consultation, group, multi-purpose, class, activity, visiting, dining, program kitchens and laundry rooms). The offices clusters can be locked off while the patient areas remain flexibly accessible for evening and weekend use.
- A strategic deployment of lockable interior doors creates a series of flexible zones that can be separated or combined, facilitating management of a changing patient population mix.
- Standardization of unit and neighborhood configuration provides ease in staff orientation to assignment changes and emergency response.
- A secure downtown allows the maximum number of patients to utilize it for therapeutic benefit.
- The Basement service level allows support services to access various locations throughout the hospital without traversing active patient areas.
- Penthouse enclosures of rooftop mechanical equipment allow for maintenance and repair regardless of weather, which will prolong equipment life and reduce down time.

The existing facilities at Worcester and Westborough encompass approximately 1 million square feet of space, much of which cannot be efficiently utilized for clinical care or support. The proposed facility reduces that figure by half, and provides for almost 500,000 square feet of well designed, efficient, usable space.

Site Selection Study

Commission members participated in the development of site selection criteria appropriate to a modern psychiatric hospital. Along with the Optimum Model, these criteria were used in comparing the Westborough and Worcester State Hospital campuses, as well as individual potential sites within each campus.

The Study determined that either campus offered a suitable site for the new facility. The Westborough campus featured the benefits of a tranquil rural setting, while the Worcester campus provided proximities only available in an urban locale.

The Worcester State Hospital campus is west of the University of Massachusetts Medical Center and Biotechnology Research Park, at Belmont Street (Route 9) and Plantation Street – several hundred yards west of Lake Quinsigamond and the Shrewsbury town line. The campus is served by the Worcester Regional Transit Authority, with bus stops in the center of the campus and at its south boundary. The property is approximately 112 acres, and presently zoned BG 2.0 – General Business.

Because the planned facility has a large footprint, and because internal ramps are problematic for wheelchairs, food and housekeeping carts, etc., the Optimum Model of a state-of-the-art psychiatric hospital requires a large tract of fairly flat land. The selected site on the Worcester campus is essentially a mushroom-shaped plateau that drops off on three sides. The limit of work is approximately 31 acres, all of it east of the Bryan Building and adjacent NRI.
Not surprisingly, this is the same site as was selected for the historic hospital built on the Worcester campus. Established in 1877 for 600 patients, it was expanded through the early 20th century to accommodate 2,224 patients in 1927. The footprint of the new facility occupies an area comparable to that of the historic complex. This site was selected as the best location for the original hospital within what was then a 600 acre property, presumably because it offered a substantially level site, was sheltered from the north, offered distant views, and enjoyed good sun exposure. These same features are what make the site so suitable and desirable today.

The Westborough State Hospital campus is one half mile north of Route 9 via Lyman Road, approximately 3 miles west of Route 495, and 10 miles east of downtown Worcester. The property has rolling fields and wooded areas, with frontage on the northeast shore of Chauncy Lake. While primarily in Westborough, the property extends over the town line into Northborough. Originally situated on 670 acres, the campus now consists of approximately 161 acres shared with other state agencies.

Much of the open land on campus that was once devoted to agriculture is now used as recreational fields. The immediate surroundings of the campus are largely undeveloped. The

main portion of the site abuts land controlled by the Department of Food and Agriculture and the Division of Fisheries and Wildlife. The campus is in the State, MDC and Municipal M District, where hospitals, nursing homes, congregate housing, and similar uses are permitted.

Similar to the conclusions reached at the Worcester State Hospital campus, the large tract of fairly flat land which most suitably accommodates the Optimum Model is the site of the original hospital. This location takes advantage of lake views, while avoiding wetlands and maintaining desirable separations from the several Department of Youth Services facilities.

The hill-top site includes a number of abandoned historic hospital buildings. The Administration Building was built in 1880, and the hospital officially opened in late 1886 with 190 patients. Most of the existing structures were built in the early 1900s, with several dating back to the late 19th century**.** The site and the pre-20th century buildings have been designated Historic Landmarks.

Both campuses are designated as Historical Landmarks.

Site Selection Recommendation

As noted above, the Commission thoroughly examined the relative merits of siting the new facility at the Westborough or Worcester campuses. Through meetings, which were open to the public, as well as public hearings, the Commission compared the respective sites against over two dozen criteria, including: access from local highways, climate, views, existing buildings, existing utility services, existing public transportation, emergency services, access to other kinds of medical care, access to community resources, and topography. While each campus offered distinct advantages, and either campus could support the building design as it was developing, the Commission determined that, on balance, the site at the Worcester State Hospital campus was most suitable. The Commission does recommend that the Westborough site be considered, should building at Worcester prove not to be feasible. A minority report, reflecting the view that the Westborough site should have been recommended is attached hereto as Appendix E.

Operating Cost and Revenue

Revenue to the Commonwealth is not expected to significantly improve over the current federal reimbursement, which has already been optimized. Federal programs presently reimburse costs for patients less than 18 years of age or above 64 years of age, generally up to a lifetime maximum sum. A liberalization of federal rules for state reimbursement is not expected in the current political climate. Current federal reimbursement is estimated as 10% of costs, and this may improve by one or 2 percent ($120,000 - 150,000) as the average length of stay and recidivism rate are reduced, by allowing more patients into the system.

Operating costs will be reduced in the new facility, due to systemic efficiencies discussed above. Operating costs are also reduced due to savings in "overhead" costs such as administrative salaries, medical and nursing administration, which are the result of consolidating two facilities into one. In addition, an energy-efficient enclosure and modern mechanical systems will permit

the introduction of air conditioning at less cost than is presently necessary to provide only heating.

Consolidation of the Westborough and Worcester State Hospitals will permit efficiencies in staffing and the avoidance of substantial projected capital expenditures to maintain the existing facilities. While combining the two existing facilities will reduce staff overall, that reduction is primarily in senior administrative staff and in facilities support personnel. It is important to note that an investment in improving the clinical quality of staff is necessary to achieve reduced lengths of stay and effective recovery. Although maintenance expenditures will be reduced in a new facility, a substantial cost reduction is not anticipated since the existing facilities have been routinely deferring maintenance expenditures. The estimated annual savings are summarized as follows:

Annual Capital Maintenance Cost Avoidance	$4.30 million
Operating Annual Savings	$4.15 million
Annual Savings (excluding annual capital cost of funding the new building)	$8.45 Million
One-time Avoidable Capital Cost (less demolition & remediation costs)	$100 Million

The existing Westborough and Worcester State Hospital facilities are at the end of their useful lives, and at risk of forfeiting their JCAHO accreditation and CMS certification due to non-compliance with current federal conditions of participation for the Medicare and Medicaid programs. Replacement of the existing hospitals with a state-of-the-art facility will preclude the possible loss of certification, which is required for federal reimbursement.

Implementation Schedule

Start of final design and construction is contingent on funding authorization by the Legislature. The design phase of the project is expected to take 18 to 24 months, including contracting the design services and modifying or refining the Conceptual Design per client input, and/or to meet budgetary constraints.

Assuming a construction manager is brought into the project during the design phase, construction could begin early for abatement and demolition, utilities relocation, excavation, foundations, and possibly structural steel.

Construction is expected to reach substantial completion approximately 44 months following the design phase. A six-month period will follow substantial completion, for start-up of building systems, move-in of furnishings, and occupancy by patients and staff.

The facility is expected to be operational some 5 ½ to 6 years following authorization of funding. Every effort should be made to reduce the time to occupancy, since Construction escalation in the last year was 7 to 8%. Industry experts seem to generally forecast that construction inflation in the coming years will be a minimum of 6% per annum.

To further control construction costs, there should be maximum practical overlap of design and construction. Reduced construction duration will not only reduce escalation, but it will also reduce the substantial cost of on-site construction staff and facilities.

Cost of Construction

Cost Containment Methodology:

Throughout development of the Optimum Model, the Study's working conclusions were compared with benchmarks compiled from modern peer institutions. From an initial list of over 25 projects built during the last two decades, which were either newly constructed psychiatric hospitals, or were psychiatric facilities associated with general hospitals, a select list of approximately 10 projects which were true comparables was developed. These projects were used as benchmarks for both program areas, and for costs.

During detailed programming of spatial needs, the floor areas being developed were compared with those of these comparable modern psychiatric hospitals. The final program was found to be below the average size of similar facilities, once adjustments had been made for features unique to this project (such as two schools for the three separate adolescent programs).

Similarly, during the early stages of conceptual design, the construction costs of these comparable peer institutions were compiled, adjusted for inflation, and for current construction market conditions in Worcester. The average cost-per-square-foot was applied to the final architectural program, to approximate the anticipated building cost for the planned facility. This benchmark-based building cost was supplemented with the estimated cost to address unique features at the selected sites, including the costs of demolition, mitigation of hazardous materials, and final development of the overall site with roadways, parking and landscaping. This work formed the basis for the comparative cost analysis of building this facility at Westborough and at Worcester.

Conceptual cost estimates were also refined for site development costs at the Worcester State Hospital site. Unique site conditions were identified and assessed, including: sub-surface investigation of ledge and groundwater; the possibility of soil contamination resulting from the 1991 fire and subsequent demolition of buildings and tunnels; and the current condition of existing abandoned structures requiring hazardous materials abatement prior to their demolition for the New Psychiatric Hospital.

Cost Estimate Process:

Upon completion of the Conceptual Design, the consultant team prepared outline specifications describing the architectural treatments, structure, mechanical systems, etc. This information and the preliminary drawings were furnished to two cost estimating teams, who independently prepared detailed estimates for comparison and reconciliation.

Estimated Project Budget.

The cost estimate for the new facility is based on the implementation schedule outlined above. The estimated project budget assumes that funding is authorized by the end of the current legislative session and design begins immediately thereafter. (Note that under Massachusetts statute, design of a state building project cannot begin until that project is fully funded.) A delay in funding would delay construction, which would result in increased costs due to inflation. At this time the effects of cost escalation being felt nationwide, and particularly in this region, are a serious concern. For every year that design must be deferred awaiting authorization, DCAM estimates that the project budget must be adjusted upward by approximately 6%-10% ($18 million to $30 million) based on current cost escalation projections.

The project is planned to be constructed utilizing Construction Management at Risk. This method enables construction to begin while design is still underway, saving time and cost. It means that work can begin on demolition, site utility work and other similar activities prior to full development of the Final Design drawings and specifications.

The estimated construction cost of the Conceptual Design is $183,000,000 in 2006 costs ($205,000,000 adjusted to the mid-point of construction in 2008). Clinical directives based on recovery, safety, and developing standards drive the building cost. These costs also include limited preservation and adaptive re-use of smaller historic buildings on the site. Hazardous materials abatement and demolition costs are estimated at $15,000,000 in current dollars.

In addition to the building and site construction cost, and the expense of mitigation, there are additional expenses required for design and construction contingencies, design fees, permits, furnishings and equipment, etc., amounting to about $44,000,000 which brings the total project cost to $289,000,000. The Total Project Cost is summarized as follows:

New Hospital including Site Development		$183 million
Site Mitigation/Building Demolition		$ 15
Total Escalation 2006 to 2008		$ 25*
Total Estimated Construction Costs		$223
Soft Costs and Contingencies		$ 66
• Professional Fees (10% of $223M above)	$22M	
• Design Contingency (5%)	$11	
• Construction Contingency (5%)	$11	
• Administration (2%)	$4	
• Furnishings & Equipment (8%)	$18	
TOTAL PROJECT COST		$289 Million

** assume additional 6% minimum annual escalation if project funding authorized later than 2006*

This cost estimate does not include the stabilization or further renovation of potentially remaining historic structures, including the Clock Tower, the Hooper turret, and/or possibly the Shops complex. None of these remaining historic buildings is currently usable to provide or support the level of care that will be the hallmark of the proposed facility; most are in such disrepair as to be dangerous even to enter, and none was considered to add clinical value to the optimal model. While the Commission recognizes the value of historic preservation, its members believe that it is the historic mission of Worcester State Hospital – the provision of state of the art care – that is the most significant historical artifact to be preserved and advanced. However, the Commission, as well as DCAM and DMH, are mindful that preservation of historic buildings must be given due consideration. Accordingly, six options for historic preservation have been preliminarily assessed. DMH and DCAM will examine these options to determine whether the optimal model might be modified to incorporate the historic buildings; however, it is clear that the cost associated with preservation and renovation of these structures is significantly more than construction of new space. The Commission was unanimous in its determination that clinical effectiveness of the new facility should be the driving factor in design decisions. Any increased cost associated with historic renovation should be measured against the potential therapeutic benefit associated with that cost. The six options, together with the estimated cost premium for each, are as follows:

Comparison of Options for Historic Preservation[7]

	Scope	Additional Project Cost
Option 1	Stabilize Clock Tower	$13 million ($24 million with renovation)
Option 2	Stabilize Clock Tower Renovate Hooper Turret	$16.5 million ($27.5m with Clock Tower renovation)
Option 3	Renovate Shops Complex	$12.3 million
Option 4	Renovate Shops Complex Renovate Hooper Turret	$15.7 Million
Option 5	Renovate Kitchen Building Renovate Shops Complex Renovate Hooper Turret	$17.3 million
Option 6	Renovate Kitchen Building Renovate Shops Complex	$13.8 million

[7] Appendix D contains photographs of historic buildings considered as options for renovation.

Conclusion

Members of this Commission represent a wide range constituencies: labor, management, consumers, families, advocates, and legislators from both political parties. Commission members were grateful for the guidance provided by Commissioner Elizabeth Childs and Commissioner David Perini, who co-chaired the Commission meetings, and for the participation of representatives of A&F. Each Commission member came to this process with his or her own ideas, and some with preconceived notions as to whether the Commonwealth should embark on a project that would involve closure of two historic psychiatric hospitals. However, in the course of over a year of work, the Commission has come to a unanimous conclusion. While there was disagreement over whether the new facility should be sited at Worcester or Westborough, there is no disagreement about the need to replace the antiquated facilities currently operating at those two locations with a new state of the art hospital to become the cornerstone of the Massachusetts continuing care inpatient psychiatric system, and the foundation from which the community based system of mental health care in Massachusetts will continue to be built. The Commission recognizes that the magnitude of this project is unprecedented in Massachusetts public building construction history, and that it requires study and support from the Administration. The Commission stands ready to work with the Administration in examining this proposal.

Appendix A: DMH Inpatient Facility Feasibility Commission

Elizabeth Childs, M.D.
Commissioner
Department of Mental Health
25 Staniford Street
Boston, MA 02114

David Perini, Commissioner
Division of Capital Asset Management
One Ashburton Place
Boston, MA 02108

The Honorable Harriette Chandler
Chairwoman, Committee on Community
Development and Small Business
Massachusetts Senate
State House, Room 518
Boston, MA 02133

The Honorable Pamela Resor
Chairwoman, Committee on Environment,
Natural Resources and Agriculture
Massachusetts Senate
State House, Room 410
Boston, MA 02133

The Honorable Bruce Tarr
Minority Whip
Massachusetts Senate
State House, Room 313A
Boston, MA 02133

The Honorable John J. Binienda, Sr.
Chairman, Committee on Revenue
House of Representatives
State House, Room 540
Boston, MA 02133

The Honorable James Leary
House of Representatives
State House, Room 39
Boston, MA 02133

The Honorable Vincent Pedone
Chairman, Committee on Consumer Protection
and Professional Licensure
House of Representatives
State House, Room 540
Boston, MA 02133

The Honorable George Peterson, Jr.
Second Assistant Minority Leader
House of Representatives
State House, Room 540
Boston, MA 02133

The Honorable Robert Spellane
House of Representatives
State House, Room 43
Boston, MA 02133

Aaron D'Elia, Assistant Secretary
Executive Office of Administration
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State House, Room 272
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Worcester, MA 01604

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Kevin Howley, Human Rights Officer
Department of Mental Health
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305 Belmont Street
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Janet Jones, LICSW
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Westborough, MA 01581

Anthony Buonomo, D.D.S.
President, Board of Trustees
Worcester State Hospital
35 Pointe Rok Drive
Worcester, MA 01604

Jack Haughey
President, Board of Trustees
Westborough State Hospital
48 William Onthank Lane
Southborough, MA 01772

Appendix B: List of Consultants

Architect – Overall Design and Project Management Responsibility
Ellenzweig Associates, Inc.
1280 Massachusetts Ave.
Cambridge, MA 02138

Architect - Programming and Planning
architecture+
Lomonaco & Pitts, Architects P.C.
297 River Street
Troy, NY 12180

Programming
Chefurka Consulting Intl. Limited
27-8038 Yonge Street
Thornhill, Ontario
Canada L4J-1W3

Building Code Specialist
Consulting Fire Protection Engineer
165 Landham Road
Sudbury, MA 01776

Landscape Architect
Horiuchi Solien, Inc.
200 Main Street
Falmouth, MA 02540

Civil Engineer
Judith Nitsch Engineering, Inc.
186 Lincoln Street, Suite 200
Boston, MA 02111

Geotechnical Consultant
GEI Consultants, Inc
1021 Main Street
Winchester, MA 01890

Structural Engineer
Lin Associates, Inc.
2001 Beacon Street, Suite 310
Brighton, MA 02135-7770

Mechanical/Electrical/Plumbing Engineer
BR+A Consulting Engineers
311 Arsenal Street
Watertown, MA 02472

Telecommunications Specialist
Communications Design Group, Inc.
10 Tower Office Park, Suite 504
Woburn, MA 01801

Cost Estimator
Vermeulens Cost Consultants
9835 Leslie Street
Richmond Hill, ON
Canada L4B 3Y4

Specifications
Collective Wisdom Corporation
75 Bay State Road
Weston, MA 02493

Operating Cost & Revenue Consultant
Specialized Health Management, Inc.
246 Walnut Street
Newton, MA 02160

Food Service Consultant
Colburn and Guyette Consulting Partners, Inc.
1020 Plain Street, Suite 290
Marshfield, MA 02050

Cost Estimating Peer Review
RF Walsh Co, Inc.
280 Summer Street - 6th Floor
Boston, MA 02210

Appendix C: Conceptual Design

Appendix D: Renovation Option Examples

Appendix E: Minority Report

Minority Report: Submitted by Linda Fountas

My name is Linda Fountas. I am a member of the DMH New Psychiatric Facility Feasibility Commission, representing patients and consumers of mental health services. From this position as an advocate and consumer, I am an enthusiastic supporter of the New Psychiatric Hospital having toured the possible sites at both Worcester and Westborough. As a Commission member, at the final acclamation vote I cast the lone minority vote in the negative for the Worcester site. I know that the Westborough "lakeside" site is best therapeutically for the patients, and was projected by Ellenzweig Associates, Inc. that the final costs would be millions of dollars less than the Worcester site.

From the first day of the Facility Feasibility Commission Meetings in January, 2005, there have been three goals as outlined in the document called The Planning Framework. These goals are:

- Provide a high quality, safe, and respectful environment for patients.
- Promote active rehabilitation as a key component of patient service delivery.
- Improve operational and physical efficiencies and cost effectiveness.

Ellenzweig Associates, Inc. was selected by DCAM to evaluate the selected sites in Worcester and Westborough. Ellenzweig presented cost comparisons of the chosen sites on September 19, 2005. The chosen site for Worcester was the "hilltop with historic remnants", with a site preparation cost of $35.6 M. The chosen Westborough site was the "hilltop" with a site preparation cost of $10.1M. Simple subtraction shows a difference of $25.5M. A second viable site in Westborough is the "lakeside", having a site preparation cost of $6.1M, thus a savings of $29.5M over the chosen Worcester site.

The Commission membership consisted of a majority of Worcester State Hospital advocates. Thus the results of the site selection were foretold even before the State spent the $1.2M hiring Consultants, Ellenzweig Associates, Inc., to study the Worcester and Westborough sites. This can be shown by reviewing the makeup of the Commission and their functions, as found in the Appendix to this report submitted by me. I believe that the Commission, from the beginning, was stacked in favor of the Worcester site. The voting process bears this out. Seven votes were cast for Worcester, four votes for Westborough, five abstentions, four Legislators absent. The final vote was by acclamation where I cast the lone dissenting vote.

Several cost opportunities were missed by most Commission members by not selecting the Westborough "lakeside" site. These are:

- No disruption to the patients or current hospital operations at either Worcester or Westborough during construction.
- Significant time and money savings during site preparation as no historic building demolition or restoration is required.

- Cost sharing savings resulting from the 25 year outstanding synergy between DMH and DYS on the Westborough campus now and in the future.
- Maximizes and makes the best use of the land at Westborough, which will be less costly to the Commonwealth over the long term.
- The Worcester site can be sold to enhance the economic base of the City of Worcester in the area of biomedical research. The monies realized by this land sale can be applied to the construction of the much needed DMH New Psychiatric Facility.

In addition to the cost savings presented by selecting Westborough over Worcester, are the added therapeutic values of serenity, beauty of location, daily sun, no matter what season, as noted by Ellenzweig in their comparison studies. These features, especially sunlight, greatly aid and enhance the recovery process. As noted by the President of NAMI MA, there are over 600 articles written supporting the therapeutic advantages to sunlight, both for those with mental illness and the general public. Chauncy Lake provides swimming therapy for the patients, who look forward to this in the summer. The walking trails are wonderful for leisure, exercise and family excursions. In light of this, I am submitting recommendations for the next step for an impartial analysis of the site preparation costs of the Westborough "lakeside" site which will prove to be far less than the similar costs at Worcester. One must remember that the site preparation costs add no therapeutic benefits to the patient.

Recommendation:

One major concern during this past year has been the issue of what is best for the patient, and has the least impact to the patients during the construction phase for the new hospital. Cost, as predicted by Ellenzweig of the Worcester site, may hamper Legislative approval of this badly needed new hospital. The design functional description of the new facility, developed over many months by more than 100 people, including DMH, patients, families and caregivers, must not be sacrificed nor reduced in scope to insure that the hospital is build able in Worcester due to the added costs of site preparation and historic restoration. Site preparation and historic restoration in the end add no value to the goals set forth by the Commission. At the Commission meeting on October 31, 2005, the Commission members voted to designate Worcester as the primary site with the contingency (Plan B) identifying Westborough as the alternative site in the event that the Worcester site does not prove to be feasible. But at what cost are we, as taxpayers, willing to pay to make the Worcester site feasible, over and above the Westborough site? This is the reason why I voted in the negative for the Worcester site, and I am submitting this report and recommendation.

Analyzing the presentations presented by Ellenzweig, I recommend that the Westborough "lakeside" site be considered and funding made available to confirm the cost figures as presented by Ellenzweig at the September 19, 2005 meeting. No money at this time has been spent for bricks and mortar. When this analysis of the Westborough "lakeside" site has been done, we can clearly say we have taken the best step forward for what is best for the patient. That is to provide the patient the best state of the art psychiatric hospital in the best location for the least cost to the Commonwealth of Massachusetts.

APPENDIX to the Minority Report: Submitted by Linda Fountas

The makeup of the Commission and their functions:

Commission Co-Chairs: Commissioner Elizabeth Childs, M.D., Department of Mental Health; Commissioner David Perini, Division of Capital Asset Management.

Legislators from Worcester: Of the seven Legislators representing various precincts in Worcester, five are members of the Feasibility Commission for the new State Hospital. They are: Senator Harriette L. Chandler; Representative Vincent A. Pedone; Representative Robert P. Spellane; Representative James B. Leary; Representative John J. Binienda.

Other non-Worcester Legislators on the Commission are: Senator Pamela P. Resor (Westborough); Representative George N. Peterson, Jr. (Westborough); Senator Bruce E. Tarr (Essex).

Other Commission members who favored the Worcester site: Carol Kleindienst, R.N., MNA Representative, Worcester State Hospital; Carole Deneault, LPN, AFCME Representative, Worcester State Hospital; James McDonald, Vice President NAMI of Central MA; Anthony Buonomo, Trustee President, Worcester State Hospital; Kevin Howley, DMH, Human Rights Officer, Worcester State Hospital.

The remaining members of the Commission: Phil Hadley, President NAMI of MA; Aaron D'Elia, Executive Office of Administration and Finance; John Haughey, Trustee President, Westborough State Hospital; Janet Jones, L.I.C.S.W., Representative of SEIU Local 509 for both Worcester and Westborough State Hospitals; Linda Fountas, Consumer of Mental Health Services.

As previously stated, it is my belief that the Commission, from the beginning, was stacked in favor of the Worcester site making it impossible for the Westborough site to be selected. One could conclude that the $1.2M spent hiring consultants could have been saved by the Commonwealth in part or in total. The voting process bears this out. Seven votes were cast for Worcester, four votes for Westborough, five abstentions, four Legislators absent. The final vote was by acclamation where I cast the lone dissenting vote.

Respectfully Submitted by Commission Member and Consumer Advocate,

Linda Fountas